"Countering Nuclear Terrorism"

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Thank you for that kind introduction and for inviting me to speak. For decades Chatham House has been identified with thoughtful consideration of important international security issues and it is an honor to appear before you.

I want to talk today about the threat from nuclear terrorism and some aspects of the U.S. strategy to counter it. In particular, I will describe our efforts to secure nuclear weapons and weapons-usable nuclear materials and to improve capabilities to detect and interdict nuclear weapons or materials that may be introduced covertly. I will explain why that is the right focus in a few minutes.

I hope to convince you of three key points. First, prevention of terrorist acquisition of a nuclear weapon or the materials to construct a crude nuclear device is our highest priority. Second, deterrence has an important role to play in countering nuclear terrorism, although in a different way than we sometimes think. Third, we must work together to defeat nuclear terrorism.

Countering Terrorist Nuclear Weapons Threats

Most analysts agree that nuclear terrorism is the most urgent threat that we face today. That threat could derive from two principal sources. First, state sponsors of terrorism could seek to transport indigenously developed nuclear weapons covertly to our homelands, perhaps by using terrorist groups as surrogates. Second, terrorist groups could purchase or steal a warhead or the fissionable materials to construct a crude device.

There are three distinct threats involving nuclear or radioactive materials. I will list them in decreasing order of likelihood, but increasing order of consequence in terms of deaths, destruction, and cleanup cost:

- First, terrorists could acquire radioactive materials that cannot be used to produce a nuclear explosion and construct devices for dispersing this material—so called radiation dispersal devices or "dirty bombs;"

- Second, terrorists could acquire plutonium or highly-enriched uranium (HEU) and build an improvised nuclear device of a few kilotons of nuclear explosive power; and

- Finally, terrorists could acquire an intact nuclear weapon from a nuclear weapons state with a yield of a few 10's to a few 100's of kilotons.

I want to focus today on threats involving plutonium or uranium and the nuclear warheads or improvised nuclear explosive devices that employ them. "Dirty bombs" would be highly disruptive and the United States is expending considerable effort to collect and safeguard material suitable for such weapons. But, in terms of actual deaths, they will not differ greatly from any other explosive.

The President's strategy for combating terrorism identifies six key objectives in our effort to keep terrorists from using weapons of mass destruction. As applied to nuclear weapons, these are:

- Determine terrorists' intentions, capabilities, and plans to develop or acquire nuclear weapons;

- Deny them access to nuclear weapons and special nuclear materials;

- Deter terrorists from using nuclear weapons;

- Detect and disrupt the movement of smuggled nuclear material or its assembly into a nuclear device;

- Prevent and respond to a possible attack; and

- Define the nature and source of the nuclear device.

Denying Access to Nuclear Weapons

Absent access to sufficient quantities of key fissile materials - plutonium or highly enriched uranium - there can be no bomb. Thus, our number one priority is to keep these dangerous materials out of the hands of the world's most dangerous people. It is impossible to overstate the importance of this point. Making a sophisticated nuclear weapon small enough to fit on a modern ballistic missile is difficult. Making a crude and inefficient once delivered by a rental truck may not be. We cannot be certain that we have controlled knowledge; thus we must control materials.

Preventing terrorist access has many dimensions. To prevent the diffusion of critical technologies we are training front line customs officers around the world. We are working to implement UN Security Council Resolution 1540, which establishes a requirement to criminalize proliferation by or to non-state actors and encourages States to strengthen export control laws and improve enforcement. Working with the United Kingdom, we convinced Libya to abandon its nuclear program. Because keeping terrorists from acquiring materials will be easier if we limit enrichment of uranium or reprocessing of spent fuel, in 2004 the President proposed a new international regime where nations would have assured access to the benefits of nuclear power without the need to develop new capabilities to enrich or reprocess.

While these aspects are valuable, we also are paying great attention to improving physical security. Much of our emphasis has been focused on Russia because that is where most of the poorly secured material was located. We have made remarkable progress cooperating with Russia to strengthen protection, control, and accounting of its nuclear weapons and materials. We have improved physical security at numerous Russian naval nuclear warhead storage sites and Strategic Rocket Forces sites. Moreover, we have accelerated by two years, to 2008, the timeline for securing hundreds of metric tons of HEU and weapons-grade plutonium at sites within Russia and the former Soviet Union.

Not all material is in Russia. We are working with friends, allies and other partners to secure weapons-usable nuclear materials worldwide, and to strengthen security at civil nuclear facilities. One area of concern is research reactors, which often use an HEU fuel suitable for bombs. Our Global Threat Reduction Initiative seeks to convert research reactors worldwide from HEU to low enriched uranium fuel and further to repatriate U.S. and Russian-supplied HEU from these facilities to its country of origin.

We are taking aggressive steps to interdict weapons-usable nuclear materials and to prevent dissemination of nuclear related technology via strengthened export controls and improved international cooperation. As a complement to improving physical security, the Second Line of Defense Program works to enhance foreign partners' ability to interdict illicit trafficking in nuclear materials. Under this program, we deploy radiation detection systems at high-risk land-border crossings, airports and seaports, increasing the likelihood of interdiction of diverted nuclear materials entering or leaving the country.

The Megaports Initiative, established in 2003, responds to concerns that terrorists could use the global maritime shipping network to smuggle fissile materials or warheads. By installing radiation detection systems at major ports throughout the world, the Initiative strengthens detection and interdiction capabilities of partner countries. In our first three years we have deployed operational systems in ports in the Netherlands, Greece, Spain, Singapore and Sri Lanka. We are at various stages of design and construction in eight additional countries and are pursuing agreements with approximately twenty more. These fixed facilities are backed up by a coalition of the willing under the Proliferation Security Initiative, using intelligence to interdict and disrupt nuclear smuggling.

These are critical steps but they alone cannot address the problem. Indeed, there is enough fissile material in the world today for tens of thousands of weapons. An integral part of our strategy therefore has been to induce other states to stop producing materials for nuclear weapons, as the United States did many years ago. We recently tabled a draft Treaty at the Conference on Disarmament in Geneva to do just that. But we supplement international diplomatic efforts with bilateral programs. For example, Russia still produces weapons plutonium, not because it needs it for weapons, but because the reactors that produce it also supply heat and light to local communities. We are replacing these reactors with fossil fuel plants. By 2008 two of the existing three plutonium-producing reactors in Russia will shut down permanently, with the third shut down by 2010.

Finally, we must deal with the tons of weapons material that already exists. The United States is disposing of substantial quantities of weapons by down blending it to lower enrichment

levels suitable for commercial reactors, but not bombs. We are also working with Russia to eliminate Russian HEU. Under the HEU Purchase Agreement nearly 300 metric tons of uranium from Russia's dismantled nuclear weapons - enough material for more than 11,000 nuclear weapons - has been down-blended for use in commercial reactors in the United States. Nuclear power generates twenty percent of American electricity and half of that is generated by fuel derived from Russian HEU. One in ten American light bulbs is thus powered by former Soviet atom bombs! In addition to the efforts on HEU, the United States and Russia have each committed to dispose of 34 metric tons of surplus weapon-grade plutonium.

If we are to encourage responsible international actions, the United States must set the example. We have dramatically improved physical security of U.S. nuclear weapons and weapons usable materials in the five years since the attacks of September 11. We recently withdrew over 200 metric tons of HEU from use in nuclear weapons; some of this HEU will power our nuclear submarines for the next fifty years obviating the need to enrich uranium for any military purpose. Seventeen tons will be blended down and used as an assured fuel supply as part of global efforts to limit enrichment and reprocessing technology.

In July, just before the G-8 summit, Presidents Bush and Putin announced the Global Initiative to Combat Nuclear Terrorism to strengthen cooperation worldwide on nuclear materials security and to prevent terrorist acts involving nuclear or radioactive substances. Paired with UN Security Council Resolution 1540 we now have both the legal mandate and the practical means necessary for concrete actions to secure nuclear material against the procurement efforts of terrorists.

Our joint activities with the United Kingdom play a fundamental role in this strengthened global partnership. Building on a history of nuclear cooperation that dates back to the Manhattan Project, our scientists, intelligence analysts, and security experts share assessments of nuclear terrorism threats and plans for response. British experience with a wide range of commercial nuclear fuel cycle technologies makes an important contribution to this partnership. We similarly seek to strengthen relationships with other friendly countries with sizable nuclear programs, emphasizing the importance of nuclear materials and of cooperation to combat illicit nuclear trafficking.

Deterrence

But, what if terrorists succeed in acquiring a nuclear device despite our best efforts? We cannot expect that they will be deterred by threats of retaliation. Indeed, the willingness of an organization such as Al Qaeda to sacrifice the lives of its members in suicidal attacks to achieve political objectives suggests that previous concepts of deterrence based on threats of punitive retaliation simply don't apply, especially since there are few fixed assets against which to retaliate.

But, we can still deter. We often think of deterrence as involving punishment, but it is broader. Another form of deterrence - deterrence by denial of gains - may play a more important role. An organization like Al Qaeda wants to be successful, even in a suicide attack. If terrorists believe that it will be extremely risky, or impossible, to acquire weapons or materials, they may be deterred from seeking such materials.

Defining the Source of a Device

A capability to identify the source of nuclear warheads and weapons materials - either before or after an attack - is a key component of our strategy to counter nuclear terrorism. If states know that if they aid terrorists we will find out and retaliate, they will not provide such aid. A state sponsor of terrorism may be deterred from conducting a covert nuclear attack, or providing nuclear weapons to terrorists, if it believes that major powers like the United States and the United Kingdom have the ability to attribute such devices to their source and the will to retaliate against both terrorists and their state sponsor terrorists.

The elements of a nuclear attribution capability involve (1) collection, lab analysis, and evaluation of technical forensics data from the device or event, (2) robust support from technical intelligence assets, and (3) rapid, coordinated fusion of technical forensics analysis with other intelligence and law enforcement information so we can respond to an attack.

The United States recently has made important progress on nuclear attribution. Over the past year, we have established roles and responsibilities for various U.S. government agencies in establishing a national nuclear attribution capability. A national capability for post-detonation attribution is now operational. The Department of Energy has also sponsored groundbreaking work on other diagnostics tools. We are working with the Federal Bureau of Investigation on fielding ground collection capabilities for both pre- and post-detonation nuclear attribution. Much more remains to be done in fleshing out the technical and policy dimensions of attribution, but the payoff for deterring covert transfer of nuclear weapons to terrorists could be vital.

To improve deterrence we need to strengthen our capability to interrupt a terrorist attack in the making. This includes close monitoring of intelligence collected against terrorist organizations interested in conducting a nuclear attack. The United Kingdom has recently shown what good intelligence can accomplish. Fortunately the attack Her Majesty's Government thwarted would not have involved nuclear weapons, but by thwarting such an attack we deter even more heinous attempts.

Detection

Nuclear materials detection has a role to play here. A robust nuclear detection system, leveraged by "tip offs" from intelligence, could help deter covert transport of nuclear weapons to by convincing our adversaries that any attempt of this sort is likely to fail. Having succeeded in the difficult task of obtaining a nuclear weapon, a terrorist would not wish to risk losing it before he can use it. He may attribute more capability to the detector network than perhaps is warranted and thus be deterred. And if he is not, a robust detection system will increase the chances that an attack can be prevented.

We should not expect any detection system to work against all potential configurations of materials. Nuclear detection is not the single "silver bullet" for countering terrorism. The low energy gamma rays emitted from U-235 can be easily shielded from radiation detectors - this reduces the standoff capability of detector systems or requires much greater detector "dwell time" to acquire a signal. Longer dwell time may simply not be practical in many transportation scenarios. More extensive approaches such as active interrogation may be more effective but

raise policy, cost, and safety issues. Fortunately, a nuclear materials detection system does not have to be perfect to be useful.

Moreover, a detection system whose sensitivity is set very low in order to increase confidence in detecting nuclear material will have a correspondingly higher "false positives" rate triggered by common sources of radiation. For extensive detection networks, the false positives problem could easily become cost prohibitive and seriously affect commerce. In this regard, developing appropriate procedures to be followed after an alarm is triggered - the so-called "concept of operations" - is as important to building a successful detection system as the physical characteristics of the detectors themselves. The United States has recently established the Domestic Nuclear Detection Office to develop an overall architecture to detect and report attempts to transport or use radiological or nuclear materials and weapons. This office is also developing next generation radiation detection monitors, known as Advanced Spectroscopic Portals that can address such important issues as "false positives." We will deploy a number of ASP systems through the Megaports Initiative.

Preventing an Attack: Search and Render Safe

Should we detect nuclear materials or a suspected nuclear device, the DOE - through its national laboratory system - deploys highly-trained teams of experts to search for clandestine nuclear materials or warheads and, if necessary, to disarm and dispose of a terrorist nuclear device. These teams work in close partnership with the Departments of Defense and Homeland Security, and the Federal Bureau of Investigation in managing our national response to nuclear terrorism. The DOE has a robust research program to support the nuclear search and render-safe mission and to improve the tools used by its emergency response teams in the field.

Managing Consequences

When all is said and done, however, there is no infallible way to prevent acquisition, or to ensure detecting and interdicting terrorist nuclear threats. At some point, terrorists may succeed. Thus it is only prudent that we also devote resources to managing the consequences of an attack including by acquiring a capability for prompt mapping of ground and airborne radioactive debris in order to support appropriate evacuation or "shelter-in-place" strategies, and by detailed planning for augmenting local emergency medical services, food and water supplies and other critical services. Most importantly, we must do much more to inform our publics about this threat, its potential consequences, and what they themselves can do to mitigate risks. The result will not be what we feared during the Cold War - tens of Soviet warheads raining down and literally destroying a city and most of its population. Rather, we must prepare for and be able to respond to an event where thousands may die in relatively short order, but where a disciplined and effective response could save thousands more.

Conclusion

No responsibility of government is more important than preserving the security and freedom of our people. Keeping our countries safe from the threats of nuclear terrorism requires the building of strong international bonds and relationships not just by national governments, but

also by police forces, border guards, cities, communities, harbors, research institutes, and factories. We are building those bonds.

Keeping our countries safe from the threats of nuclear terrorism requires sustained dedicated effort by devoted civil servants, laboratory scientists, and leaders in the national security community. The United States and the United Kingdom both have an exceptional group of men and women working on countering the nuclear threat. I am proud to be associated with them.

Above all, keeping our countries safe from the threats of nuclear terrorism requires strong, determined leadership. From the President and Prime Minister on down we have that leadership. Our approach involves cooperation between nations and respect for international agreements. It involves creative use of technology. Where necessary, it involves the use of force. In short, it involves all the instruments of national power. We are determined to prevent nuclear terrorism. We must not fail. We will not fail.

Thank you for your attention. I look forward to your questions.